

Data, Variation, Uncertainty ...and Cookies

Welcome!

Eating, drinking, and biking through Statistics

August in Philadelphia, PA

Course Overview

Variation in the world around us

- What is variation?
- Course content
 - Stat 603/604: methods to *describe* variation
 - Stat 621: methods to *explain* variation

Making decisions in the presence of variation

- Casebooks offer collection of small decision-making examples
- Contemporary examples (investing, planning for future)

Emphasis of course

- Interpretation
- JMP software will do the tedious calculation

Foundation for Statistics 621

- Material is not repeated there.

Statistics Sequence

What happens in the different courses?

Statistics 603	
Statistics 604	Condensed version of 603, with 6 classes
Statistics 608	Waiver preparation
Statistics 621	Fall-term required course

Syllabus

Required materials

- Casebook
- JMP-IN software (comes on a disk with manual/stat book)
 - Available in computer labs on Wharton campus
 - Help sessions on Tuesdays to review materials
- Course pack from Reprographics
- Name tents

Optional materials

- Freedman *et al* textbook, good reading for thoughtful background
- Hildebrand & Ott text is optional for 603 and in 621.

Contacting me for help

- Send e-mail to stine @ wharton
- Come to office in afternoon (4-5:30 on class days)

Web page www-stat.wharton.upenn.edu

- Follow links to class web pages
- Click on my face to go to my personal page
- Copies of class hand-outs, lecture notes, data sets in examples

Teaching assistants

- Conference room in SH-DH 3009 as described further in the syllabus

Feedback forms for each class

- Sample for each class based on SS/Student ID number

Grades

- Best kind ... there aren't any!
- Nonetheless essential for Statistics 621
- Feedback exam and assignments

Cookies

Introduction

- Chips-Ahoy bag claims it contains 1000 chips
- Does it? Does it have *exactly* 1000 chips?

Why would there be variation in number of chips?

- Variation in manufacturing...
 - Are chips hand-placed in each cookie, or
 - Is something more “random” at work?
- Sources of variation
 - Characteristic of manufacturing process
 - Between lots, bags, and cookies.
 - Definitional: What’s a chip? Variation from measurement itself.
- Is variation good? Inevitable?
 - Cost to have no variation (count out chips)
 - Less variation with fewer chips vs. more variation with more chips

Group tasks

- Divide into groups of 10 students
- Choose a team name and team recorder (to keep things organized)
- Decision-making
 - Gather data first (i.e., count chips)
 - Do bags have 1000 chips? (All of them, “typical”)
- Estimation
 - How many chips in the bag?
 - How many chips are in a cookie?
- Audit trail (for me to collect)
 - How was a chip defined?
 - Count of chips for 10 cookies.
 - What methods were used?

Introduction to JMP-IN

Spreadsheet-based statistics package

- Can easily import data from Excel
- Lots of useful *interactive* graphics

Data entry

- Team "name" as a label
- Column types and differences from Excel